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FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

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Death of Horses from Electric Shock.

By Captain F. C. MINETT, R.A.V.C.

The following cases of death from electric shock serve to emphasise a danger which must usually pass unsuspected. For this reason they are placed on record. The circumstances were as follows:—

At a military camp near Cairo a certain cavalry regiment was accommodated in stables of a temporary nature. These were double-rowed, wooden structures each about 100 yards long and were arranged in parallel series with an interspace of about 25 yards. The floors were of sand firmly pressed down and the mangers of zinc sheeting which was continued the whole length of the standing. At one end of each stable and at a distance of two yards from it was built a wooden shed which was used for storing equipment. The sheds were lighted by electricity, the current being carried by a bare wire attached to standards which were placed between the stable and the shed and about a foot from the latter. One day this wire was found broken at a certain point, the loose end hanging down to the ground at the foot of one of the standards. It so happened that shortly before the accident took place a soldier tied one end of a stout piece of wire round this standard and the other end to some wire netting fixed to the metal manger of the stable, the object being to prevent loose horses straying from one squadron's lines to another. The current was switched off at the time when this wire was tied and, partly for this reason, no doubt, danger was unsuspected.

On the night of the accident the current was switched on to the camp as usual at 6 p.m., but the electric circuit was apparently not completed until 10-45 p.m., when a sentry was startled to find a valuable private charger dashing about its loose box in an extreme state of terror. On going to ascertain the cause of this he himself received a shock from the metal work of the stable. He called for assistance, but by this time the animal had sunk to the ground and was apparently dead. The astonishment became greater when a light was brought and it was discovered that four troop horses in addition had apparently been electrocuted without a struggle in their stalls where they were lying down. Eight others were in danger, but evidently received no shock, for they remained quiet and were immediately liberated.

At 11 p.m. the current was switched off as usual. I made an examination of the animals within an hour of the occurrence and the first thing which struck me as remarkable was the position of the dead animals. The attitude of the four troop horses was absolutely similar, viz., lying on the right side, legs in partial extension, head pressed back over the left shoulder with the right side of the neck touching the manger. There was no sign of any struggling nor could any burns or other injuries to the skin be found. In all cases the pupils of the eyes were widely dilated, the sphincter ani muscle was relaxed exposing the rectal mucous membrane, fæces had been passed at the moment of death and in the case of the geldings the penis was protruding eight or nine inches from the sheath and quite flaccid. Only in the case of the private charger was a difference noted. This animal had not been killed immediately. Here the attitude was similar except that the body was rather more sprawled out, there were signs of struggling and abundant bright red, frothy discharge from both nostrils was present.

POST-MORTEM EXAMINATION.

I was able to make a *post-mortem* examination of one of the troop horses twelve hours after death. The carcase was in excellent condition and fairly fresh. On removing the skin from the abdominal wall, chest, shoulders and neck, there was found to be considerable filling of the subcutaneous veins together with a small amount of gelatinous exudate. No sign of burning of the skin could be found, although very carefully looked for especially on the right side of the neck. In the abdominal cavity no abnormalities referable to the mode of death could be seen. The serous membranes showed no petechiæ. The stomach contained a considerable amount of fresh ingesta and the inner surface showed two habronemic tumours of the right side. The intestines were filled with normal ingesta and the mucous membrane was quite normal. The lungs were not as collapsed as normal and inspection of the surface showed hæmorrhages beneath the pleura. A small proportion of these were as large as hazelnuts, the majority a good deal smaller. On the cutting into the lung one noted a close-set scattering of petechial hæmorrhages; these were more in evidence in the

right lung and much blood oozed away from the cut surface. The trachea contained a moderate amount of frothy discharge and large areas of the mucous membrane were black with congestion. The heart muscle was flabby and the right side in a state of dilatation. This dilatation, however, was probably related to the mode of death and the relaxed state of the muscle, as although the capacity of the right ventricle was about 750 c.c., its walls were of normal thickness. The organ weighed 4,620 grams. The blood was black and incompletely coagulated.

One may, I think, profitably discuss this accident under certain headings.

1. *Magnitude of electric current involved.* Many readers will probably feel astonished that an ordinary (low tension) lighting current would be sufficient to bring about practically instantaneously the death of five powerful horses, especially when it is remembered that it is quite a common thing for human beings to receive shocks which have no serious effects when tampering with electric switches, etc. It was ascertained that the lighting current in the district was an alternating one of 210 volts. A factor, however, which may be of greater importance than the actual voltage is the degree of contact one has with it, that is to say, the extent of body surface in contact, with the electrified object and the ground. Further, one has to consider the intimacy of this contact and here comes the question of the state of the skin surface (wet or dry) at the moment and the state of the ground. In the case of these animals a large area of the body was brought into intimate contact with the conducting metal of the manger and, as four out of the five were undoubtedly lying down, a large area of the body was touching the ground. When one thinks, in addition, that the ground was in all probability moistened with urine and that the animals' skins may have been moist owing to the humid state of the atmosphere which prevailed in this part of Egypt at the time, it is not so difficult to understand how a lethal dose of current was "earthed" through the animals' bodies. Although therefore, the voltage in this particular instance appears to be low, what really causes death is the amount of current transmitted through the body, and for the reasons stated one must assume that contact had been sufficiently intimate for a lethal dose of current to be reached.

With regard to the susceptibility of the equine species to electricity it has been stated frequently that horses are particularly susceptible, more so, for instance, than men. Cases are, however, known in which men have been electrocuted by relatively weak currents when contact was good, as when their hands were wet, and one instance was reported in which a man was electrocuted in his bath while tampering with the electric light bulb hanging overhead.

I have been unable to find references to a current of this voltage having killed large animals, though Kitt (1) states that alternating currents of 160 volts are sufficient to kill dogs, and it is well-known that currents such as are used to drive electric trams (voltage at least 500) may be immediately fatal. That such shocks may not always be fatal is shown by an interesting case recorded by Oeller (2) in which a horse over many months exhibited curious symptoms referable to having received slight intermittent shocks from an electric lighting wire which had been laid in a wall behind its manger. In this instance evidently contact was not intimate. Hobday and Stainton (3) have recently described the case of a small dog which received a shock of 100 volts without a fatal result.*

2. *Effects of the shock upon the body.* Although complete *post-mortem* examinations were not made in all the cases it may be taken for granted that the current produced the same effect in all. The appearances seen are in close agreement with those set forth by Nunn (4) at a veterinary meeting in 1905, and by Hunting, Dewar and others in the discussion which followed. It is more than likely that the presence or absence of discharge from the nose may be taken as an index of whether death was instantaneous or not. Lewis Green (6) in the case of some horses which received shocks from electric tramway wire made the same observation, viz. :—That those which were killed instantaneously showed no bleeding from the nostrils, while one which was some time dying and those which recovered bled from both nostrils.

With regard to the mechanism by which death is brought about in electrocution, one modern view is that the chief factor is "fibrillation" of the heart ventricles. One may quote from McLeod (5) :—

"Fibrillation of the heart ventricles is undoubtedly a common cause of death in man for, of course, the confused movements make the ventricles incapable of contracting on the contents of the heart. It is a condition which can probably never be recovered from in the higher animals, but it is of interest that the ease with which it is set up as the result of an electrical stimulus varies to a marked degree in different animals.

Of the hearts investigated in this way, that of the rat has been found to be most resistant to stimulation, then in order come those of the rabbit, cat, dog and horse. There is good reason to believe that the heart of man is readily affected. Fibrillation of the ventricle is undoubtedly the main cause of death in most cases of electrocution.

Curiously enough, however, it has been stated that whereas a current of ordinary intensity (2,300 volts alternating) produces ventricular fibrillation in the heart of certain of the lower animals, at least in that of the horse, a very much stronger current does not do so, and may indeed cause ventricular fibrillation produced by a more moderate voltage to disappear. Unfortunately, however, these stronger currents produce irreparable damage in the central nervous system."

If this be the true explanation in all cases it appears that a very much smaller amount of current than that represented by 2,300 volts is sufficient to produce

* In compiling this section I have been fortunate in receiving advice from Dr. P. Phillips, D.Sc., formerly Professor of Physics in the Royal Veterinary College, London.

fibrillation of the ventricular muscle in the horse, but in view of the statement that this condition in the larger animals can probably never be recovered from, it is probable that the effect on the heart is not by any means the only one, and that some other factor, such as interference with the respiratory centre, may be at work as well.

3. *Prevention of such accidents.* Accidents such as these show that in the construction of buildings for stabling animals the position of the electric supply should not be forgotten. Where there is possible danger and the disposition of the fittings cannot be changed, measures should be taken to ensure that in the event of breakage of wire, the current will flow to earth through a conductor other than a living one. At the military camp in question the mangers rested on wooden supports and most likely the result would not have been so serious had these supports or some of them been clothed with metal sheeting extending a few inches into the ground.

(1) "Textbook of Pathology."
(2) *Veterinary Record*, February, 1916. Abs.
(3) *Veterinary Journal*, March, 1923.
(4) *Veterinary Record*, January, 1905.
(5) "Physiology and Biochemistry in Modern Medicine." Third edition. 1920.
(6) *Journal of Comparative Pathology and Therapeutics.* Vol. xiv., p. 376.

The Diseases of Animals Acts.

Position and Powers of Local Authorities.

In January the Ministry of Agriculture and Fisheries issued the following Order:—"Any power conferred upon a local authority or an inspector of a local authority by any Order made by the Minister under the Diseases of Animals Acts, 1894 to 1914, whether before or after the date of this Order, may, unless otherwise expressly provided in the Order, be exercised by the Minister or an inspector of the Ministry of Agriculture and Fisheries respectively." In March the Executive Council of the County Councils' Association approved the following resolution of their Agricultural Committee:—"That, in the opinion of the Committee, the Order should be amended so as to make it clear that its operation is confined to cases in which necessary action has not been taken by the local authority concerned or by an inspector thereof."

At the meeting of the Executive Council on Wednesday the Agricultural Committee reported that the following letter had been received from the Ministry:

"I am directed to refer to your letter and previous correspondence on the subject of local administration of the Diseases of Animals Acts, and in reply to state that the Ministry has carefully considered the suggestion of the Association for an amendment of the Order of the Minister, No. 1243.

"There was no intention on the part of the Ministry to curtail the powers of local authorities or their inspectors by the Order 1234.

"The Order was issued solely with a view to adjust the anomalous position whereunder, since the issue of the earlier Order No. 829 of 3rd February, 1922, the powers of an inspector of the Ministry as the central authority under the Acts were actually less than those possessed by the veterinary inspectors of a local authority. As in the case referred to in the correspondence forwarded to you, occasions may arise in which it is essential from the point of view of preventing the spread of disease that the officer who is first aware of the existence of circumstances necessitating certain action should be empowered to take such action immediately. The Ministry was advised that the issue of an Order in the terms of Order No. 1234 was necessary to confer this power.

"Your Association will realise that in some of the cases in which the power conferred by the Order is exercised by an inspector of the Ministry there may be no question of default on the part of an inspector of the local authority—*e.g.*, where a report of suspected foot-and-mouth disease is made direct to an inspector of the Ministry who may be in the vicinity of the affected premises on other duties. For this reason it would, in the opinion of the Ministry, be improper to suggest that in every case in which action has been taken by the Ministry's inspector there has been default on the part of the local authority's inspector.

"In the above circumstances the Ministry does not think that any amendment of the Order in question on the lines suggested would be desirable. I am to add that the Ministry much regrets that the intention of the Order, which was merely for the purpose of adjusting in certain minor respects the existing machinery for giving effect to the Diseases of Animals Acts, should have been misconstrued."

The Executive approved the following resolution:—"That the Committee, whilst appreciating the reasons which have actuated the Ministry of Agriculture in their decision to issue the Order in question, are still of opinion that the terms of the Order are too wide, and that it should, therefore, be amended by the insertion of a proviso limiting its operation to cases in which (i.) necessary action has not been taken by the local authority concerned or by an inspector thereof, or (ii.) an officer of the Ministry is the first person to become aware of the existence of circumstances requiring immediate action."—*Local Government Journal.*

Metereo-Medica.

By J. W. Rainey, M.R.C.V.S., Regents Park.

In choosing the above title for the following remarks, the writer runs the double danger of being thought illiterate, or frivolous, but he has faced these risks in the interests of brevity. This note is based upon the suggestion that the method of treatment of open wounds might be varied in accordance with the degree of atmospheric humidity, and, possibly, heat. In the course of observations made over extended periods in such different atmospheric conditions as those of the South African plateaux, the South Sea Islands, and Northern Europe, it seemed to the writer

that a fixed routine method of open-wound treatment was not uniformly successful. In a dry atmosphere irrigation, continuous or intermittent, provides the basis of a generally satisfactory routine; in a humid atmosphere this method is disappointing. When the air is heavily saturated with moisture, bland absorbent dry dressings, often renewed, seem to give the best results.

Such a form of treatment in a hot dry atmosphere, when the discharge from a wound quickly desiccates, may be ineffectual, because the bactericidal effect of a dry antiseptic cannot be exerted through the external dried or semi-coagulated pus which covers the surface of a wound like a varnish. Tincture of iodine has little effect when the wound-discharge is freely fluid, whereas, by reason of its powers of penetration, it is useful in the opposite conditions.

It is suggested that, even in the same locality, the method of treatment may with advantage be varied to meet the changes in temperature and atmospheric humidity. It was observed during the late war that some of the veterinary hospitals in Egypt strongly advocated the treatment of open wounds by irrigation, but that in the veterinary hospitals in France there was a preference for the dry-dressing system.

Official enquiry into this circumstance by the Veterinary Department of the War Office elicited the opinion from at least one source that the reason for this difference was climatic.

The writer cannot recall the source of that opinion; no doubt the official papers which contained it are on record. No originality, therefore, is claimed for the foregoing remarks, which are only offered because it is thought that, if the idea is a true one, the principles underlying it should be more generally applied.

An Operation and its Sequel.

Mr. T. F. Prime, M.R.C.V.S., sends us the following newspaper report of a case heard recently at the Croydon Police Court, upon which he comments: "The man who is unqualified seems to be able to get cocaine, etc., and to do as he likes."

At the Croydon Police Court William John Cable, of 10 Grange Park Road, Thornton Heath, was summoned for performing an operation on a cat without due care and humanity, and also for performing the operation without the cat being under the influence of an anæsthetic to prevent all feeling of pain.

Mrs. Jarvis, of 40 Bridport Road, Thornton Heath, stated that she desired the operation performed on two cats, a blue Persian and a tabby, both thirteen months old. On June 26th, she saw defendant and asked if the operation would be performed painlessly, and he said it would be, and that cocaine would be used. The charge was 2s.6d. for one or 4s. 6d. for the two. The operation was on June 27th. The blue Persian was sent home the same day, but owing to its condition she called in a veterinary surgeon on July 5th. The wound was then discharging.

Answering Mr. R. J. Clark, who defended and pleaded not guilty, Mrs. Jarvis said the arrangement was that the cat should be returned immediately after the operation.

Inspector Sullivan, R.S.P.C.A., who called and saw the cat on July 4th, also said that the wound was discharging. He afterwards saw defendant, who said that he had used chloroform, but when witness asked to see it he said he was out of it and that the bottle was over at Mr. Jones's, the chemists. Witness went to Mr. Jones, but was not able to verify what defendant had said.

In reply to Mr. Clark, witness admitted that defendant showed him a piece of sponge which he said he had used for the chloroform.

Richard Arthur Jones, chemist, of 105 High Street, Thornton Heath, said he had never supplied defendant with cocaine and he could not remember having supplied him with chloroform.

Answering Mr. Clark, witness admitted that defendant was a customer at the shop, but he would be surprised to learn that defendant or his boy had recently been a customer for chloroform.

Mr. Peter Thrale, veterinary surgeon, who examined the cat on July 5th, said that it was in a poor condition, and one incision, which was too large, was discharging and was in an unhealthy state.

Mr. Clark submitted that there was no evidence that an anæsthetic had not been used, and asked for this summons to be dismissed.

Defendant said that he carried on the business of a home for dogs and cats and had had dogs and cats from Justices on the Bench. He had never had any complaint before. His boy went for the two cats, but lost one on the way.

Mr. Clark explained that the boy let the cat out of the bag or the basket, and one cat escaped on the way.

Defendant said he used chloroform for the operation on the blue Persian, and produced the bottle, which still contained some of the anæsthetic. He used every care and had performed some hundreds of similar operations.

In reply to Mr. G. Jones, who prosecuted, defendant said he had no qualifications.

The Bench thought the R.S.P.C.A. did quite right to bring the case before the court, but the Chairman said that they did not think defendant had been unskilful or negligent in the way in which he had performed the operation, or that he ever would be, and both summonses would be dismissed.

Animal Nutrition.

Important facts, likely to be of much economic value, have, says *The Times*, been established at the Rowett Institute, Aberdeen, as a result of scientific and metabolic research into problems connected with animal nutrition. The institute, which is named after that generous donor to its funds, Mr. J. Quiller Rowett, of Ely Place, Frant, Sussex, and was opened by the Queen in September, has issued its first report on its work, which aims at determining the best and most economical methods of stockfeeding and the reduction of the loss of animal life due to nutrition diseases.

The report states that, as the greater part of the ill-health of human beings is due directly or indirectly to nutritional disorders, by a fuller knowledge of nutrition many disorders could be cured or prevented. The fundamental principles are the same in human nutrition as in the nutrition of farm animals. Information gained in research work at the Rowett Institute throws a further light on the processes of digestion and metabolism and on the problems of food requirements common to both man and the lower animals.

Experiments on pigs, for example, have shown the probability of rickets in children being to some extent due to the same cause as rickets in pigs. In pigs the chief factor in the production of rickets is the lack of a proper amount and balance of the mineral matter of food. In

children rickets usually come on at the age when the children are being weaned on to foodstuffs largely derived from cereal grains. These refined products are even more deficient in essential minerals than grains and grain offal fed to pigs. An experiment on the influence of water on protein metabolism showed that a man's drinking about five pints of water extra per day resulted in an increase in the apparent digestibility of protein and in the better utilization of protein digested and absorbed. Increased water drinking was found to lower the blood pressure, a result of interest in clinical medicine, as high blood pressure is recognised as a common cause of degenerative changes in the tissues, especially the kidneys and blood vessels. These changes shorten life.

Experiments with Pigs.

During the Parliamentary recesses Dr. Walter Elliot, M.P., worked with the staff of the Institute investigating rickets and the mineral metabolism of pigs and sheep.

The peculiar sight is to be seen on the farm of the Institute of numbers of goats wearing masks resembling gas masks which are fixed to the horns by elastic bands. Each mask is provided with an inlet valve which admits air, and another valve which passes the expired air to a rubber bag. The expired air is analysed by a calorimeter, the amount of heat produced by animals giving an indication of the amount of food being used. The goats look ludicrous while wearing the masks, but these cause little or no inconvenience, the animals frequently chewing the cud when wearing them.

Pigs fed on various amounts of fish meal were tested by Aberdeen bacon curers and the culinary department of a leading restaurant. The result showed that when the pigs were fed entirely with residues from white fish containing about 3 per cent. of oil it was impossible to detect any fishy taste in the bacon. Similar results were obtained with regard to cows' milk, chicken flesh and eggs. Before the war about 50,000 tons of white fish meal were shipped to the Continent, chiefly to Germany. The Institute authorities consider it most probable that in future all available fish meal will be used at home, with a profit to the stock feeder, for balancing the nation's deficit in protein and mineral matter.

The Third 3,000-galloner.—Dunninald Daphne, a British Friesian owned by Mr. E. Furness, has completed a yield of 3,000 gallons of milk in one lactation period, the actual time taken to achieve this production being 291 days. As she is still giving 7 gallons daily and has another 74 days to go, she should easily beat the British record of Brookside Colantha, whose yield was 3,115 gallons in 365 days. Daphne was a first prize winner at the Royal in 1919, and a year later gained first prize at the Dairy Show. She has shown her ability as a breeder, one of her daughters being first and reserve champion at the Royal Welsh, and one of her sons first in a strong class of young bulls at the Newcastle Royal Show. During the last six years she has given over 9,000 gallons of milk.

A goose which has just died in North Breconshire was thirty-one years old.

The Veterinary Record.

1st September, 1923.

National Veterinary Medical Association of Great Britain and Ireland, Limited.

Cheques should be made payable to the Acting General Secretary at the Offices of the Association, 12 Buckingham Palace Road, S.W.1.

N.B.—Members receiving this paper in a brightly-coloured wrapper will please understand that their subscription is already overdue, and should be forwarded at once to the above address.

DEPARTMENTAL DELAY.

Early this year the Council of this Association appointed a Committee to draw up a scale of fees which they could recommend to members to charge for work performed under the terms of the Milk and Dairies Acts and Orders. This Committee met several times and gave a great deal of earnest consideration to the matter. A provisional scale was drawn up, but, since it was found that the intention of those who framed the regulations was that the producer should pay the cost of veterinary inspection, etc., it was felt that if an adequate scale of fees for the duties imposed was recommended for adoption, the whole scheme would become unworkable and a beneficent measure would fail. The Committee felt that it would be better for individuals to make their own terms with producers, and has endeavoured to obtain from the Ministry of Health some alterations in the duties required of the Veterinary Surgeon, so as to make the regulations more workable from the veterinary point of view, and consequently not so costly to the producer, who, after all, would be called upon to pay. The Ministry of Health notified the Association that new regulations were in hand and would shortly be issued. Months have passed, but the new regulations have not been forthcoming. Application was made three times for these regulations in the month before the York meeting, and again with no result. The Committee sat once more for nearly two and a half hours at York in the endeavour to formulate some recommendation which might be usefully given to the profession, but it was strongly felt that more harm than good might result from such a step until the Ministry of Health could see its way to produce the long-promised regulations stating the duties which would be required of veterinary surgeons. Members who are asked to inspect herds under the Milk and Dairies Acts should in the meanwhile, therefore, make their own terms with the producers, bearing in mind that, while they should get a fee that will recompense them for the work done and time occupied, they should refrain from

asking such a high fee as will influence the producer to decide that it is not worth his while to undertake to produce the higher graded milk which is so greatly to be desired if we are to have a really clean milk supply.

The Association is still active in this matter, and further steps taken will be reported at a future date.

The Jersey Appointment.

A few weeks ago we drew the attention of our members to the terms of a whole-time appointment offered by the States of Jersey; the salary was £250 per annum, less, we understand, than the emoluments of the Cattle Inspector, who acts under the direct orders of the State Veterinary Officer. We must refer our readers to the articles which have appeared in the *Record* on page 497 (July 14th), and on page 464 (June 30th). In the latter article we urged members to be loyal and to refuse definitely to have anything to do with the appointment until a salary of £500 per annum (as unanimously agreed upon by this Association) be offered. We pointed out that a veterinary surgeon accepting such a post could only do so because "owing to personal shortcomings he knows he is incapable of doing better for himself." . . . "Bad pay does not attract good men, and generally, almost invariably, brings its own reward in bad work."

We regret very sincerely to read that a member of the Royal College of Veterinary Surgeons has seen fit, in spite of our warning, and in spite of our appeal and the unanimous decision of the Association, to lower himself sufficiently to accept this post with its miserable pittance of £250 a year. The gentleman in question is not a well-known member of our profession, nor a member of this Association, although he has been qualified a considerable number of years. We have yet to learn that he has especially qualified himself to hold a public appointment such as the one he has now sought, and we must infer that he considers the value of his services will be properly met by the salary he is prepared to accept. We condemn the step taken whole-heartedly as being one in antagonism with the interests of his profession. We hope that veterinary surgeons practising in the Channel Islands will unite in letting him know how the profession regard his action, and will be exceedingly chary of extending to him the usual courtesies that are exchanged between professional men.

National Veterinary Medical Association.

PRESENTATION TO MR. J. B. BUXTON.

	£	s.	d.
Total of contributions received	87	15	6

This Fund is now closed.

Clinical and Case Reports.

The Editor will be glad to receive from members and others contributions to this column of reports of interesting cases.

Hæmorrhagic Septicæmia (Bovine)?

By MAJOR R. N. LEWIS, M.R.C.V.S., Campbeltown, Argyll.

The communication under the above heading in the *Veterinary Record* for August 11th has interested me in so far as it has been my misfortune to come across between thirty and forty cases during the past two years.

I wish, therefore, to give you an outline of a disease similar in all respects to the one quoted by Mr. Masheter as it has occurred in this district (South Western Scotland) during 1922 to 1923.

In August, 1922, I was called to see a stirk that was reported dead, the cause of death being suspected to be anthrax. The blood examination proving the absence of anthrax, a *post-mortem* was conducted, when the following lesions were observed:—

Slight extravasation of blood at the nostril and clots at the anus; mucous membranes pallid. On opening the abdomen, the peritoneum was seen to be covered with large petechial hæmorrhage, also the peritoneal fluid was blood-stained. The rumen was fairly full, but the mucous membrane was lying in shreds amongst the ingesta, in which there were present ordinary grasses of the hill and a few stalks of bracken with the green fronds of the same plant. The reticulum and omasum were practically normal, but the abomasum showed slight congestion and thickening of the mucous membrane, and the contents were fluid and slightly blood-stained. The small intestines showed dark red patches of extravasated blood, and the contents became more blood-tinged as one passed on towards the large bowels. Similar patches were observed in the latter, and the mucous membrane was corrugated, the contents being almost wholly composed of blood clots. The liver showed cavernous angiomatous areas, and was pale and friable. The kidneys exhibited petechiæ in the cortex, and were pale. The spleen was flaccid, but not enlarged, and the outer surface was covered with ecchymoses. The gall bladder was probably enlarged and there were present ecchymoses on its outer surface. Examination of the lungs revealed hyperæmia, and the heart was pale and ecchymosed on the outer surface. The pericardial sac contained blood-stained fluid.

In the absence of anthrax, death was ascribed to septicæmia.

This animal was one of nine grazing on a hill pasture with a reputation for sudden deaths.

Two more deaths occurred at five-day intervals under similar circumstances, when a doubt began to arise in my mind as to the correctness of the diagnosis.

The possibility of plant poisoning was considered, and the hill was examined by a botanist, but no plants were discovered that could produce lesions as described

above, and, after eliminating all other poisonous plants, bracken remained as the only possible cause, this being present in all carcases so far, although only in small quantities. To satisfy myself, portions of the bowel were sent to the Chief Investigator, A.D.R.A., who suggested that the specimens seemed typical of bracken poisoning.

Altogether, of the nine original cattle on the hill, seven died—the last case occurring about four weeks after they had been removed from the bracken-infested area. Two other farms in the same district lost seven cattle between them this year, and two more died at a farm thirty miles away.

In all cases the pasturage was similar and bracken was plentiful.

In 1923 further outbreaks occurred on the same farm as the first outbreak in 1922. The farmer took precaution and removed all but six cattle off the suspected pasture on July 1st. The remaining six were allowed on the ground till July 6th. On July 8th I attended one of these six, and it showed the following symptoms:—Temperature 106°F., pulse 90, respiration 70; it was depressed and uneasy; there was a slight trickle of blood at the nostrils, black tarry blood at the tail, horns cold, and evidently the stirk was seriously ill. Demulcents and stimulants were administered per stomach tube, but death took place on July 10th. The lesions presented were in all respects similar to the case detailed above.

Altogether, five of these six died showing symptoms and lesions as recorded.

The A.D.R.A. were notified of the outbreak this year, and formalin tubes were sent down for morbid specimens. In all twenty-eight specimens were sent, and I received a notification to the effect that all samples seemed typical of bracken poisoning. In all during 1923 I saw sixteen cases in four farms.

The treatment consisted of removing the cattle from the bracken pastures and the administration of demulcent drinks, oleaginous purgatives and salines, but of the sixteen eleven received treatment, and of these nine succumbed. The other five were already dead on the first visit.

It may be of interest to state that one farmer here lost twenty animals in one year prior to the war, and that the cause of death was supposed to have been hæmorrhagic septicæmia; but it may only be a coincidence that when this farmer took pains to keep his stock off his bracken land the disease stopped. It is also worthy of note that these cases can occur up to a period of four weeks after the cattle have been removed from bracken land.

I can find little or no literature in the subject of bracken poisoning, but cases have been mentioned by Mr. John Brown, F.R.C.V.S., occurring in Sutherland in 1919, and by Mr. D. M. Storrar, who states that he has seen several cases of "fern poisoning."

I am informed that in the new *Veterinary Encyclopædia* an article on bracken poisoning is given, written by Professor G. D. Lander, who details symptoms which correspond closely with those given above. This article also mentions that possibly the plant *potentilla tormentilla* may have some share in causing the disease, though in the cases occurring in this district no tormentil was observed by the botanist.

There is also a short article on bracken poisoning in the *Journal of the Board of Agriculture*, March, 1918, giving a résumé of the findings of the Board's Veterinary staff on this subject, which agrees fairly closely with the symptoms and lesions already quoted.

Fracture of the Third Trochanter.

By J. E. Barnes, M.R.C.V.S., Matale, Ceylon.

Subject.—Bay Australian thoroughbred mare, four years old.

History.—I was training this mare, but had to go away on December 25th, 1922, for a few days. On the morning of the 25th of December she went a nice exercise gallop, pulling up sound.

On my return on December 31st, 1922, I found that she was lame. While I had been away she had been out at walking exercise and had had no accident of any kind of which I could hear.

Symptoms.—I saw her first on the afternoon of the 31st December; she was lying down in the stable, and was disinclined to rise. On being made to get up she staggered and fell against the wall. She eventually got on her feet, however, and stood up. In turning to walk out of the stable, she was seen to be "rolling" behind, and in the act of turning she crossed her hind legs, and had some little difficulty in extricating them.

On being made to walk, at each stride she carried her off hip high. Her step with her off hind foot was shortened, and the foot before being put to the ground was markedly adducted, the foot being put down with what I thought must be the "tapping" movement described by Franke (Dollar, page 936).

The adduction that I saw in this case appeared to me to correspond with the symptoms described by Roloff in his case (Dollar, page 936).

In turning, the mare rolled about, and was very disinclined to lift her off hind leg at all, only moving it when it looked as though she were about to fall.

Diagnosis.—I suspected at first that she had injured her back. This I ruled out, as the defects were only on one side, and because she could kick quite well with either leg when they were lifted alternately.

I looked next for fracture of the pelvis, but could detect no crepitation, either per rectum or externally. There was no visible deformity.

The possibility of its being obturator paralysis was next explored, but was dismissed, because in these cases the limb is adducted.

I then came to the conclusion that she had sustained some injury to the nerves supplying the adductors, and decided to wait and see if she would improve. I accordingly kept her in the stable for a month on low diet, giving her pot. iodid., nux vom., and arsenic. At the end of that time I took her out to exercise daily. She had improved considerably, and I began to feel quite hopeful about her. She

did not, however, continue to make progress, and I destroyed her on the 14th of this month (July).

At the time of destruction the mare was in good condition, and no muscles had atrophied.

Post-mortem.—This showed that the third trochanter of the right femur had been completely broken off from the rest of the bone. It was found lying on the back of the bone, as it were, hinged back from the line of fracture, practically on to the tubercle for the insertion of the biceps femoris. This muscle appeared to show some fatty degeneration near its insertion to this tubercle, as did also the superficial gluteus.

I enclose a photograph of the femur, and of the broken trochanter.

This mare showed no signs of osteoporosis.

PHOTOGRAPH OF FEMUR.

Unfortunately a pariah dog got at the bone when it was drying, and has eaten away the great trochanter, as well as doing some damage to the distal end.

Luckily the separated third trochanter is quite clearly shown.

In a case in which a Heysham farmer sued the proprietors of a bobbin mill for £65 damages for the loss of three calving heifers by red-lead poisoning, it was alleged that defendants had negligently deposited red lead on an occupation road in front of their works; while they on their side contended that plaintiff had been negligent in allowing cattle to stray. The judge cited several cases which made it clear that, where poisonous substances were deposited on land, there was no liability for loss to trespassers. There was no nuisance in the act of defendants in depositing the red lead on an occupation road, and it was no interference with the proper use of the road had the cattle been carefully driven over it. The action was dismissed, with costs.

Abstracts.

Changes in Virulence of Tubercle Bacilli (Edward R. Baldwin, M.D., *New York State Journal of Medicine*, November, 1922). *Ex. Trop. Vet. Bull.*

Experiments on re-infection in tuberculosis carried on during the last four years at the Saranac laboratory show very considerable variations in the virulence of different strains. A culture (R.I.) of human bacilli thirty years old is now only slightly pathogenic, and a culture (H.37) insolated seventeen years ago is still quite pathogenic. Bovine tubercle bacilli B1 twenty years old is still very virulent for rabbits. Further investigation is suggested concerning the experiments by Kolle, Schlossberger and Pfannenstiel on the production of pathogenic strains from the bacilli of timothy grass, butter and reptiles, by three passages through guinea-pigs and white mice.

A standard procedure is suggested for the determination of the virulence of different cultures of tubercle bacilli. It may be possible to correlate different clinical forms of tuberculosis with variations in strains of bacilli.

The Effect of Stasis on the Development of Amœbic Dysentery in the Cat (A. W. Sellards and Lamberto Leiva, *Philippine Journal of Science*, vol. xxii., No. 3, January, 1923.)—*Ex. Trop. Vet. Bull.*

A laparotomy was performed on three cats under general anæsthesia, and a ligature placed around the large bowel in order to produce stasis in its upper end. A suspension of *Entamœba hystolitica* was inoculated into the cæcum. All three animals developed lesions above the ligature.

This experiment elucidates one factor in explaining (*a*) the usual occurrence of the initial lesions of amœbic dysentery in the cat in the lowermost portion of the large bowel; (*b*) the superiority of intracæcal inoculations over injections per rectum for ensuring infection with amœbæ; and (*c*) the occasional failure of virulent amœbæ to infect susceptible kittens.

Stasis is probably an important factor in determining the location of the lesions within the large bowel in spontaneous amœbic dysentery in man.

The National Clean Milk Society has published a pamphlet on the organisation of clean milk competition, showing three different ways in which these may be carried out, namely: (1) By judging the methods employed and the conditions of the buildings and equipment on the producers' premises; (2) by judging the condition of the milk itself as offered for sale by the competitors; and (3) by a combination of (1) and (2). The advantage of the first method is that particular attention is called to those points in equipment and method which experience has shown to be most necessary, whilst the advantage of the second method is that the finished product itself is judged. Naturally, the third method involves much more work and expense.

Association Reports.

Lancashire Division.

An ordinary meeting of the Lancashire Division was held at the Royal Army Medical Corps (Territorials) Headquarters, Upper Chorlton Road, Manchester, on April 18th, at 3 p.m. The chair was taken by the President (F. G. Edwards, Esq., F.R.C.V.S.), and other members present were Messrs. Wadsworth, Walker, Wright, Taylor, Lord, Woods, Holroyd, Dobie, Garside, Brittlebank, Giblin, Allen, Abson, Dixon, Oddy, Sumner, junr., Mayall, Munro, Lindsay, Curbishley, Noel-Pillers, Warburton, Lancaster, Ackroyd, Spruell, Hopkin and Wilson.

Apologies for unavoidable absence were received from Messrs. Stent, McKinna, Urmson, Kenny, Hughes and Locke.

The minutes of the last meeting were taken as read.

Correspondence.

The following letter from Mr. G. H. Livesey, Acting General Secretary, National Veterinary Medical Association of Great Britain and Ireland, was read :—

Dear Mr. Spruell,—It had been my intention to be present at the meeting of the Lancashire Division next Wednesday, but I am afraid I shall not be able to manage it this time. I must defer the pleasure of my visit to some future occasion, preferably to your Annual General Meeting.

I hope the Lancashire Division will support the efforts I am making to get the National on a sound financial footing, and the *Record* a better paper, both as a journal and as a business proposition. I want to see the paper self supporting, and if possible contributing substantially to the funds of the N.V.M.A. This can only be done by (1) increasing the circulation ; (2) increasing the number of advertisements. You will realise that these are almost impossible of accomplishment by one man like myself sitting in an office. I *must* rely on the divisions for support (and active support, too) in strengthening themselves by getting more members (who will pay their subscriptions, by the way), and in influencing commercial firms to give us advertisements.

Will you urge the Lancashire men not to let me fail for lack of support from my native county ? On my part I shall do my utmost to make the National the great Society it ought to be, and I put my services, such as they are, willingly in the hands of the members. Any help that I can give from this office at any time will be gladly put at the disposal of your division.—With best wishes, yours faithfully, (signed) Geoffrey H. Livesey, Acting General Secretary.

There was a general expression of opinion that the Lancashire Division had never been behindhand in supporting anything for the good of the profession, and it was definitely resolved that the Acting General Secretary be informed that he could rely upon them to render every assistance possible.

A letter was read from Mr. E. H. Stent, intimating his inability to attend owing to illness. It was proposed by Col. Brittlebank that a letter be sent to Mr. Stent sympathising with him on his long illness, and congratulating him on the improvment that had taken place. Col. Brittlebank stated that the Association could ill afford to do without such members as Mr. Stent, who had served them year in and year out so faithfully. Mr. Woods seconded the proposal, stating that he could only echo the sentiments expressed by Col. Brittlebank. The President (Mr. F. G. Edwards) said he was sure it would be the wish of every member of the Association to see Mr. Stent amongst them again. Carried unanimously.

Nominations.—The following were nominated for membership of the division: Mr. R. Finch, F.R.C.V.S., D.V.S.M., Preston, and Mr. Ducksbury, junr., M.R.C.V.S., D.V.S.M., Lancaster.

Election of New Member.—Mr. A. M. Fulton, M.R.C.V.S., Birkenhead, was unanimously elected a member of the division.

Prior to the meeting a demonstration was given by Mr. Gunning in the Riding School of the Royal Army Medical Corps Headquarters, Upper Chorlton Road, Manchester, the subject being the methods by which the examination of the genital tract should be carried out. He also demonstrated a number of pathological conditions of the uterus and ovaries in specimens kindly sent by Mr. Hayhurst.

The demonstration was an extremely practical one, and was much appreciated by the visitors and members present. At the conclusion of the demonstration all retired to the meeting room, where the following paper was read by Mr. Gunning :—

A Few aspects of Bovine Sterility and Treatment.

Mr. Gunning : I appreciate fully the compliment this division has paid me in asking me to read a paper here to-day. The subject you have asked me to discuss is one of ever-increasing interest, both to stock-owners and veterinarians. I am cognisant of the fact that the task should have been entrusted to a more competent authority, however, in coming to a final decision to accept your invitation, I felt that perhaps a consideration of some of the recent work that has been done on the diseases of reproduction might prove of interest and form a basis for more detailed study and discussion. I, therefore, do not propose to offer you anything original, but rather to confine my remarks to the observations and records of a few pioneers in the study of sterility, with an attempt to bear in mind its practical aspect in so far as it is of interest and applicable to veterinary practice.

It seems essential, at the outset, to have an understanding of what is meant by sterility. In its strictest sense it might be defined simply as inability to reproduce. Its causes may, however, be most varied, and may involve any part of the genital tract of the male or female. In addition to the environment of the animal, breeding, feeding and housing may be contributory factors. It, therefore, seems impossible to confine the subject of sterility within very narrow limits. In fact, the subject seems to embrace an inexhaustible series of conditions both directly and indirectly interfering with reproduction.

Generally speaking, in Great Britain the dual purpose Shorthorn has been the backbone of the milk supply and milk production as one unit of an agricultural system. Our country is favoured with truly wonderful facilities for marketing stock, and sterile animals have offered little if any economic loss. I think this offers an explanation for the little attention that has been devoted to the subject of sterility in the past. However, this argument fails to hold to-day. The rapid advancement in specialisation and production has led to changed conditions, and at the present time hardly a herd is unaffected by the problems connected with reproduction, the economic loss through which it is hard to estimate. It is evident that a large undeveloped field lies before those who are concerned with cattle practice, and the cattle practitioner is constantly confronted with problems of sterility at present little understood. For instance, we find apparently healthy virgin heifers which fail to conceive or conceive only after repeated copulation. We come in contact with every graduation of metritis, often rampant and unheeded, sowing the seeds of permanent and incurable sterility. Again, we are consulted in regard to individual animals of high value which fail to reproduce their kind, others showing erratic sexual desire, and remaining a menace to the herd, to say nothing of the male offender, who goes often unsuspected.

In order to do justice to these and other problems, it is necessary to carry out a systematic investigation and to be conversant with the more common abnormalities to be looked for.

In the female the vagina, cervical canal, uterus, oviducts, and ovaries should each receive special consideration.

The vagina in itself probably has little significance in the condition of sterility, but the cervical canal, dividing the vagina from the uterus, is one of the most important seats of genital infection. Physiologically it is important in secreting the mucus of œstrum and in pregnancy of the uterine seal. The mucous folds form an ideal breeding ground for bacteria, resulting in an inflammation of the mucous membrane. This forms a barrier to conception, by inhibiting the passage of the spermatozoa or, if fertilization takes place, prevents the organization of the uterine seal.

Williams (1) considers the latter the greatest danger from cervicitis, when the infection tends to inhibit the proper sealing of the cervical canal and is free to attack the embryo immediately it arrives in the uterine cavity. This is a probable explanation for the return of œstrum several weeks after conception is supposed to have taken place. Swelling of the mucous folds of the cervix also compresses the cervical canal and interferes with the proper drainage of the uterus. Either as an extension of the cervicitis or as the result of previous infection the uterus becomes an important factor in sterility.

Williams (2) states that in virgin heifers endometritis is always associated with cervicitis, and is largely dependent thereon, and that cervical endometritis is also a common occurrence in cows, and forms the essential basis for abortion or, as the result of previous infection through abortion, retention of placenta, etc., diffuse endometritis of all grades may be found. Should pyogenic organisms gain access, the uterus may become filled with pus and pyometra result. It has been proven that the glandular and epithelial structures of the uterus are able to tolerate a remarkable degree of insult without becoming destroyed, but, just so long as infection goes on unheeded in that organ, there is always grave danger of the infection spreading to the more inaccessible oviducts. These narrow tubes, which form a connecting link between the uterus and the ovaries, are the common meeting ground of ova and spermatozoa. They are, therefore, particularly significant in reproductive efficiency. They are not ordinarily palpable *per rectum*. In the milder cases of infection the mucous membrane alone is affected; in the more severe forms the infection spreads to the deeper layers—thus there are recognised a catarrhal form, pyo-salpinx, and hydro-salpinx. In pyo-salpinx the condition becomes palpable *per rectum*.

A valuable contribution to veterinary research on the oviducts by Carpenter (2) throws a new light upon these organs. Ordinarily salpingitis has not been considered as a factor in sterility except in those cases in which the enlargement of the tube can be readily palpated. Laboratory examination has proved that extensive alteration of the tube takes place without macroscopic changes, thus giving salpingitis a much more important part in the diseases of the genital organs than it has been given previously. Williams (1) states that "since 90% of the cases of salpingitis are bi-lateral, the duplication of ovaries and oviducts avails little—consequently tubal infection closes permanently the reproductive career of the animal." The pathology of the bovine ovary is at present little understood. In health, at about the close of œstrum, the distended ovisac ruptures and discharges the ovum, leaving a crater which quickly fills with a blood clot. Soon after the rupture of the ovisac there is liberated from the walls of the crater a distinctive tissue designated the corpus luteum. According to Frankel (3), "if the ovum is fertilized, the corpus luteum is responsible for maintaining the raised nutrition of the uterus during gestation. If the ovum be unfertilized, it merely produces a hyperæmia of menstruation, and then undergoes degeneration until it is renewed in a fresh position." The corpus luteum develops to about the size of a marble or acorn, and almost entirely obliterates the ovary. (1) In sterility the corpus luteum is one of the most common sufferers from the pathologic changes, thus, in dealing with the pathology of the ovary, we have to consider both the cystic condition of the ovisac (Graafian follicle) and the cystic condition of the corpus luteum. There appear, very frequently, small retention cysts of the Graafian follicle. The significance of these cysts is unknown. However, they seem as numerous in ovaries that function normally as in those that do not. But there is another form of cyst which apparently has

its origin in a pathological condition of an unruptured ovisac. The ovum perishes and the follicular liquid becomes enormously increased—this condition manifests itself in the cow in erratic sexual desire, change of voice, and later, after a few weeks, changes take place in the pelvic ligaments. Quoting Williams: "nymphomania occurs chiefly in young cows of high pedigree undergoing severe strain." He further states: "it strikes, most frequently, the greatest dairy cows, and all too often ruins them, causing a severe economic loss."

Again, quoting Williams: "the commonest disease of the ovary of cattle is cystic degeneration of the corpus luteum." It seems quite justifiable to say that the disease is referable to an infection which enters the crater of the freshly ruptured ovisac from the oviduct, hence cystic corpus-luteum is seen with great frequency in connection with chronic salpingitis. Another common form of ovarian trouble appears to be persistent corpus luteum, in which case it does not undergo either atrophy or degeneration, but sinks deeply into the ovarian tissue and remains unchanged for an indefinite period, inhibiting œstrum, the spontaneous expulsion of the fœtus, or pus contained within the uterus.

Thus far we have considered the female only. The bull, as a factor in sterility, has been generally disregarded—in fact, the ability of the bull to copulate is almost universally accepted as the standard of his reproductive efficiency. The question as to whether the semen contains virile spermatozoa, or whether the genital organs harbour pathologic organisms capable of transmission to females, seems so far to have been totally ignored. Yet clinical studies now indicate with great clearness that the bull is an active spreader of that group of genital infections which cause sterility, abortion and retained placenta. Gillman (4) states that the bull, when once affected, is a much more dangerous spreader than the cow, and of 40 bulls examined by him, 50% showed lessened fertility and others showed minor changes in the genital organs and semen. The male genital organs include the testicle, epididymus, vas-deferens, seminal vesicles, prostate and Cowper's glands, and the penis. It is unfortunate from a practical point of view that these do not lend themselves to a complete and thorough examination, and, clinically, the diagnoses of sterility rests principally in the examination of the testicles, epididymus, seminal vesicles, penis, and semen. The anatomical position of Cowper's and the prostate glands makes palpation of these impracticable. The testicles seldom show microscopic lesions except abscessation, although being frequently the seat of pathological process. The ductus defrerens, conveying the spermatozoa from the testicle, frequently shows degeneration and exfoliation of the lining membrane, and when this occurs, it is usually associated with changes in either the testicle or seminal vesicles. The seminal vesicles are perhaps the most common seat of infection, the acute form of inflammation is accompanied by either inflammation of one or both glands. On rectal palpation this may be quite easily distinguished, and pinching of the part causes distinct flinching and evidence of pain. Bearing in mind the unreliability of clinical examination, it is evident that the semen must remain the most valuable clinical aid to diagnosis, and that a large field lies open in the practical examination of the semen to that end. Not only is the seminal fluid frequently the carrier of several varieties of bacteria associated with genital infections, but in a large percentage of cases the essential spermatozoa are abnormal either in their motility or morphology, or both; likewise the seminal fluid is subject to changes detrimental or injurious to the existence of viable spermatozoa. In cases studied by W. W. Williams (6) that exhibited no marked clinical lesions, but in which there were slight changes in the spermatozoa, the condition was due to a weakened state of the germinal cells and not to infection. Of course, at some remote period in the lives of these animals it is highly probable an orchitis was present. In attempting the diagnosis of the various forms of sterility, familiarity with the healthy genital tract is essential—both by digital manipulation *per rectum* and by noting the colour and texture of the visible mucous membrane.

In the case of young heifers, it is often impossible to detect any abnormality. In such cases dilation of the cervical canal and exploratory douching may show shreds of muco-pus in that organ.

The simplest evidence of a cervicitis is a swelling of the first annular ring.

In itself, cervicitis is generally remediable, and swabbing the cervix with full strength Lugol's solution seems to have become a universally adopted treatment, while Delvine has used with satisfactory results a 40% silver nitrate solution in persistent cases.

Endometritis and pyometra may be recognised by the discharge, the enlarged or flabby condition of the uterus (by palpation per rectum) or by douching the uterus and observing the return of fluid.

A 1% Lugol's solution has given good results for douching purposes, and in advanced cases this treatment is followed by the injection of slow dissolving disinfectants, such as iodoform suspended in a neutral oil, repeating the treatment in ten days to three weeks until recovery takes place. The obscure position of the oviducts and ovaries makes it evident that, to obtain the most successful results, treatment must be centred on the posterior portions of the genital tract.

Treatment of the oviducts has not yet proven very satisfactory. Maguire (7) reports favourable results with autogenous vaccines in cases of chronic salpingitis.

Dislodgment of the corpus luteum has become of value in the treatment of pyometra and manual removal of cysts in the treatment of nymphomania of cows.

It must, however, be borne in mind that a smattering of therapy does not solve the question of sterility. As in other branches of medicine, an intelligent system of prevention must be the goal of

concentrated effort—the breeding from only sexually-clean animals must be the ideal to be aimed at. In many cases the initial step must be a thorough cleaning up. Once this is accomplished, attention should be directed to the minor abnormalities as they occur, especially during the puerperal state; indeed, I think our control methods must go further—perhaps to the calf. The fact that young bulls and heifers become sterile before reaching the age of maturity leads us to the question, When does infection take place?

The theory of Williams (8) that calves become infected during nursery period, or even before, appears to be one well worthy of consideration. In 1912 he first ventured the opinion that the health of the young calf directly affected the reproductive efficiency of the adult. He states that: "It is satisfactorily clear that an infection within utero-chronic space penetrates the chorion and, reaching the amniotic fluid, is swallowed by the embryo . . . In other words, each and every microparasite discovered in the utero-chronic space of the cow has also been recognised in the digestive tract of the fœtus concerned.

If it is true that the fœtus and new-born calves harbour these organisms in their digestive tracts, is it not quite reasonable to suppose that the various abrasions that must be caused in the intestinal epithelium during attacks of calf diarrhœa, or even minor digestive disturbances, form an ideal portal of entry for these organisms? They finally gain their predilection seat in the genital organs, there to remain dormant until puberty. The calves may finally recover and show every appearance of perfect health until the breeding age arrives."

Williams further adds that the saving of the life of a calf is an utterly worthless performance unless there is added to it the safeguarding of its sexual life.

Lastly, the fight against sterility could be greatly assisted by placing a premium on the ability of an animal to reproduce and making this a condition in milk and butter records.

In compiling these few remarks I have quoted liberally from a few workers who have devoted untiring study to the diseases of breeding cattle. I make no excuse for doing so, for, although much may be conjecture, it is only by a continual investigation of all available records and a persistent sifting of the theories therein contained that the truth will be eventually discovered.

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Discussion.

The President, Mr. F. G. Edwards, said it had been a great pleasure to everybody present to witness such a fine demonstration and listen to a most important and interesting paper by Mr. Gunning, and he now called for a good discussion.

Mr. A. W. Noel-Pillers said: "It is with extreme pleasure that I rise to initiate the discussion on Mr. Gunning's paper. Although I do not come into close contact with cases of sterility, I realise that it is a subject of great importance to the veterinary surgeon, to the stock-owner, and, indirectly, to the town dweller. I am, I think, in general terms responsible for the attempt to persuade Dr. Gunning to give us this paper, and, apart from anything else, I should like to congratulate him upon the willing way in which he accepted the task without making excuses, as is often the case. The recent advances in our knowledge concerning sterility is a subject which I think should bring home to all of us the fact that it is essential to read, to attend societies, and to have a good official journal. If one turns to what has been happening in America, one will see that nearly every short course for practitioners at the various colleges contains provision for the discussion of the anatomy and physiology of the reproductive organs, together with the clinical examination of them, and demonstrations upon the diseases with which they are likely to be affected. At American Society meetings the subject of sterility always draws good discussions and large attendances at demonstrations. Their journals, too, have of late often contained very instructive matter upon this subject, and I think it is a pity that our own official organ has not at times seen fit to keep us more fully posted on the matter from such papers as *Veterinary Medicine*, *The Journal of the American Veterinary Medical Association*, the *North American Veterinarian*, and the *Cornell Veterinarian*. One does not like to run down one's members, but we should at least be fortunate if we had a few men like Williams, DeVine and Schmoker to help us with regard to sterility. In addition to these, the importance of the endocrine glands (mammary gland, corpus luteum and placenta) in relation to the organs of reproduction has been well shown by Shigley. Although I may be getting a little bit wide of the subject, under the 'Importation of Animals Acts' and Orders made thereunder, veterinary surgeons will be travelling from Canada to this country, and it seems quite possible that some of these gentlemen might be capable of giving us their points of view on various diseases. We often see in the professional press that eminent veterinary surgeons have returned to their home countries after visiting the United Kingdom. Would it not be possible, through our official organ, to arrange in some manner that these

eminent men might meet us? It is quite likely that such intercourse would be of mutual benefit. After listening to Dr. Gunning's paper one cannot help but feel that a third tract is exposed to bacterial infection. We are so apt to think of the respiratory and alimentary tracts as being in connection with the outside air, but there appears to be no doubt that bacterial infection of the genital tract, especially of the female, is of great importance. The paper and demonstration that we have had to-day seem to me to point out that a sound knowledge of the anatomy and the physiology of the reproductive organs, coupled with up-to-date methods of examination, are the basis of an understanding of some of the aspects of sterility."

Mr. WILSON, M.R.C.V.S., said it had been a great pleasure to him to listen to such an interesting paper that afternoon, and that, so far as his experience went, out of every six cows inoculated with abortion vaccine one or two had remained sterile for some considerable period. He cited the case of a farmer who not only got about 50% of cattle he bought to go to the bull, but, so far as those bred on the farm were concerned, very little difficulty had been experienced. He would like to know if Mr. Gunning thought contagious abortion had anything to do with sterility.

Mr. CURBISHLEY stated he had spent a most pleasant afternoon, and thought the paper should be instructive to the profession at large when it reached the people through the veterinary press. He noted that, in Mr. Gunning's opinion, it was unwise to go on using Lugol's solution too long, but it would be wise to change the treatment in dealing with unfit conditions of the *os*, and suggested that iodoform in paraffin would provide an excellent substitute. Mr. Curbishley stated he had been much interested in a condition he had seen, namely, necrosis of the *os*, and he was wondering whether Mr. Gunning could suggest any specific line of treatment for such a condition. Vesicular vaginitis was a common condition met with. He asked if the essayist would tell him if it was safe to use a male on an infected animal.

Mr. FLETCHER, as a visitor, thanked the President and members generally. He would like to know any information as to improved methods by which a practitioner could arrive at a correct diagnosis, and so make some form of prognosis.

(*To be continued.*)

Notes and News.

The Editor will be glad to receive items of professional interest in these columns

A circular letter is being sent out to-day to all those members who are receiving the *Record* in a coloured wrapper, once more reminding them that their subscription to the Association for 1923 is still unpaid, and that by order of the Council, if their subscriptions are not received by September 30th, the Association will cease to send them the *Record* after the issue of September 29th next. Members can obviate all this trouble both to themselves and to the Association by filling up and returning the banker's order which is enclosed with the circular.

* * * *

The *Record* of September 8th will contain the detailed account of the York meeting, and will be enlarged accordingly. The business of the Council and general meeting contain some very far-reaching decisions which affect the Association, and may go a long way to increase its importance and utility. The proposal to throw the Association open to Colonial Societies will be welcomed as a step towards linking up and uniting our profession throughout the world.

* * * *

In the list of guests at the Annual Banquet published in the local press and quoted in the *Record* last week, we noticed that the name of Mr. Reginald Hudson was inadvertently omitted. Mr. Hudson is the senior partner in Messrs. Hudson and Son, printers of the *Veterinary Record*, and a very good friend. We believe we are right in thinking that Mr. Hudson found a certain pleasure and fascination in seeing in the flesh many gentlemen whom previously he had seen many times *in print*. We hope to have the pleasure of his very genial company on many future occasions.

* * * *

It was with much concern that we received at the office the following extract from the *Stratford-upon-Avon Herald*:—

"A motor accident occurred at the Campden Road turn at Clifford on Saturday afternoon last, when a car driven by Mr. W. W. Lang, veterinary surgeon, of Sunnydene, Brigg, Lincolnshire, came to grief in negotiating the turn. Mr. Lang was journeying with his wife and little nephew from Brigg to Somerset at the time of the mishap. All three were taken to the hospital and detained. It was found that Mrs. Lang was suffering from the more serious injuries—fractured ribs and considerable shock—while Mr. Lang had escaped comparatively lightly with a fractured patella, and the little boy had received flesh wounds only."

Our many readers who know Mr. Lang will share the relief felt when from Mr. Lang himself came the message:—"Glad to report that we are both making satisfactory progress."

The staff of John Bell and Croyden, Ltd., whose activities as veterinary transfer agents are familiar to readers of our advertisement pages, held their annual sports on Saturday last, in the grounds of Coston House, near Harrow, kindly lent by Mr. and Mrs. Arthur Langham. Upwards of 300 members of the staff, with friends, attended, and competition in the various events was very keen. The prizes, which in many cases were very handsome, were presented by Mrs. Arthur Langham, and their presentation was followed by dancing on the lawns, to the accompaniment of a very excellent orchestra. The grounds, which in themselves are very beautiful, were illuminated, and a display of fireworks delightfully brought to a successful conclusion a most enjoyable day.

FOOT-AND-MOUTH DISEASE.

On the evening of August 28th the existence of Foot-and-Mouth Disease was confirmed on premises

at Templebrough, Rotherham. The Ministry of Agriculture accordingly issued an order prohibiting the movement of animals in an area within a radius of approximately fifteen miles of the infected premises. The district includes parts of the counties of the West Riding of Yorks, Notts, and Derbyshire.

Next morning the existence of disease was confirmed on premises at Norbreck, near Blackpool. In this case also the usual order is being issued. The district to which restrictions apply in this locality lies wholly in Lancashire.

Royal College of Veterinary Surgeons.

OBITUARY, 23rd AUGUST, 1923.

ARGO, J. C., Auchnagatt, Aberdeenshire. Graduated Edinburgh, 21st May, 1902. Died 2nd August, 1923. Aged 61.

BROWN, THOMAS H., 53 Lauderdale Gardens, Hyndland, Glasgow. Graduated Edinburgh, 19th December, 1898. Died 18th August, 1923. Aged 48.

CROWHURST, JOHN JAMES, Henley Street, Stratford-on-Avon. Graduated London, 30th March, 1880. Fellow 29th July, 1892. Died August, 1923.

THE LATE MR. J. J. CROWHURST.

John James Crowhurst, F.R.C.V.S., who passed away recently, in his 66th year, was well known and highly respected in the Stratford, Alcester, Henley-in-Arden and Shipston-on-Stour districts, and his death, says the *Stratford-upon-Avon Herald*, will be regretted by many who admired his bluff, genial manner, and especially the way in which he bore up under his recent illnesses. He was a son of Mr. E. G. Crowhurst, F.R.C.V.S., of Amersham and Leamington, and secured membership of the Royal College of Veterinary Surgeons in 1880, gaining his fellowship in 1896. This occasion was unique, inasmuch as of the six entrants for this examination, four were Crowhursts, John James and his father, and his two uncles, W. H. and James, of Canterbury. Mr. Crowhurst came to Alcester as locum to Mr. W. Rose, F.R.C.V.S., and on the latter's death in 1881 bought the practice. He married in 1881 Elizabeth Minna Rose, daughter of Mr. John Rose, veterinary surgeon, of Stratford-on Avon, and on John Rose's death in 1883 Mr. Crowhurst bought this practice and amalgamated it with the Alcester one. The Stratford practice had been in the Rose family for 130 years. Mr. Crowhurst built up a big business, and his skill in veterinary science was generally acknowledged. In addition to attached appointments he was at one time veterinary inspector for the Alcester and Shipston Divisions. He was appointed in 1892 as local veterinary inspector for the Ministry of Agriculture and Fisheries, an office he held for 31 years, and his honorary services to the R.S.P.C.A. were greatly appreciated by the Society. For some nine years he served on the Town Council. He was a member of the St. Alphege Lodge of Freemasons, Solihull, and a founder and member of the R.A.O.B. Lodge. Mr. Crowhurst came of a long line of veterinary surgeons, and at one time no fewer than 17 Crowhursts were on the veterinary register.

The Scholar's Request.

The following is a copy of a letter recently received at the R.C.V.S.:—

July 27th, 1923.

Gentlemen

As I am desirious of becoming a Veterinary being used to horses and Cattle from Childhood, have a Course of horse breaking and a Course of Animal Breading and is not in a position to spend all my time at College though being a good schollar, could I have a course by Correspondence and then an examination under you or could you put me under some M.R.C.V.S. Gentlemen there as I have a good situation and if I pass out arlight better still. I understand many names in Structure of Horses such as Nosk hernia cannon Bone Cleft whithers hock fetlock Nasal Glit Ribs Lungs etc Injuries such as Scrottle hernia Windgalls, Glandor farcey side Bones Splint Thyropia Bursal enlargments etc inflamation Lungs Bowels collic stopping thong penis a Bortion Slips, Tulbucocoss, Brochinte inflamition borum absoses, Chills fevers Worms Bottic or Stomach Tape or Round piston Joints alick fever. I am quite interested in same. Kindly give me what assistance it requires fees etc.

Gentlemen,

I am,

You faitful,

Sheep Scab Order, 1923.

The Ministry of Agriculture has recently made an Order requiring that the occupier of any farm or holding on which sheep are kept, or any owner of sheep kept on common land, shall take such steps as are reasonably practicable to secure that his sheep are free from Scab. If he fails to do so, the Order makes him liable on summary conviction to a fine not exceeding £20, or, if the offence is committed in respect of more than four animals, to a fine not exceeding £5 for each animal, or, in certain cases, to imprisonment. The Order places the onus of proving that he took the steps required by the Order, upon the person charged, in the case of proceedings instituted on or after the 1st July, 1924.

Under the Order, sheepowners have new and important responsibilities, and these have not been placed upon them without the full concurrence of representative agriculturists, many of whom have recently urged upon the Ministry the desirability of taking more drastic measures for the eradication of Sheep Scab than have been in force hitherto. The present position with regard to the disease moreover is far from satisfactory. During the last four years (1919-1922) the number of outbreaks reported by Local Authorities have been:—438; 476; 757, and 683, respectively, whilst in the first half of 1923 there have been 344 outbreaks.

The principal difficulties in securing the eradication of Sheep Scab in the past have been the general carelessness and apathy displayed by some sheepowners in carrying out the dipping operations which are prescribed under the Sheep Scab Orders, and the reluctance which still exists in some quarters to accept double dipping as the effective

(Continued at foot of next page.)

Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

The R.S.P.C.A. and the Performing Animals (Regulation) Bill.

Sir,—I was glad to read of the action of the Central Veterinary Society with regard to the letter from the secretary of the R.S.P.C.A. It is wise that the profession should have representatives on a body such as it is proposed to form. It may be that those selected will be able to keep *regulation* to the fore, and check the prejudice introduced by those who make a fetish of *defence*. The idea that because a man is in uniform he is a fit and proper person to regulate anything and everything in connection with animals is just so much bunkum, for, before he is in a position to attack cruelty or defend happy animal existence, he must have a knowledge of animal habit, temperament, physiology and condition, and not be a man in a blue uniform that poses that he has such knowledge.

As the Rev. Dr. Rosslyn Bruce states :—"There are old women" of both sexes and all ages who consider the smacking of a puppy when he forgets himself on the carpet cruel, and with such there is no reasoning." As to whether the training of animals is of any material benefit to anyone—well, the monks of Alpine monasteries train their dogs; the Belgians—and indeed the English—their flying pigeons, and shepherd dogs; the French their ambulance dogs and police dogs; and the whole world their horses; and in every case firmness has to be shown in the early stages of training. Performing animals are mainly free from the cruelty, hardship and privation that reigns in Nature among wild animals. The exaggerators state that peforming animals are not happy, but if suitably housed, fed and exercised they are as happy as most athletes. Their vieing with each other to do certain feats, their eagerness to do them, and their joyful antics when they have done them are quite apparent to most understanding folk. I once had an argument with an ultra-sentimentalist who made the remarkable statement that whatever an animal was forced to do that was unnatural was cruel. I replied that animals were made for man, and not man for animals, and called his attention to the state of chaos that would exist if all animals remained untrained and were allowed to work their own sweet will.

(*Continued from previous page.*)

method of curing and preventing Scab, that is to say, two dippings at intervals of not less than 7 and not more than 14 days between the dippings. The new Order does not supersede the existing Sheep Scab Order of 1920, which prescribes the procedure to be followed in connection with individual outbreaks of Sheep Scab, and still requires any person having sheep affected with or suspected of Sheep Scab to report the fact at once to the police.

In connection with this Order and for the general benefit of sheepowners, the Ministry has issued a leaflet which gives full information concerning the nature of Sheep Scab and the best means of its prevention and cure. In addition, the Ministry makes the offer to send a veterinary inspector to deliver a lantern lecture on Sheep Scab, if a request is received from any local society of sheep farmers who will hold itself responsible for securing a good attendance.—*Ministry of Agriculture and Fisheries.*

Four additional farms are affected by the outbreak of foot-and-mouth disease in the Renhold district of Bedfordshire.

I think he went away less superficial in his outlook and more thoughtful.

There is still a good deal of truth in the old lines about

"Compounding sins we are inclined to
By damning those we have no mind to."

There may be a considerable amount of cruelty practised, both to men and animals, where the R.S.P.C.A. induces ex-servicemen to rely upon the opinion of their inspectors in the purchase of horses.*—Yours truly, G. MAYALL, Bolton.

* The following appeared in *The Manchester Guardian* of July 20th :—

The R.S.P.C.A. and Ex-Servicemen.

To the Editor of the Manchester Guardian.

Sir,—Shortly after the termination of the war the R.S.P.C.A. (Manchester branch) publicly announced its readiness to place the services of its inspectors gratuitously at the disposal of ex-service men who desired to purchase a horse or pony to enable them to earn a livelihood. Large numbers availed themselves of this privilege, and subsequently expressed their gratitude for the assistance and advice rendered. Unfortunately many others, not knowing of the Society's offer, obtained unsuitable, and in some cases unfit, animals from unscrupulous horse dealers, with consequent loss and trouble, but, seeking the aid of the Society later on, were in most cases got out of their difficulties. Requests for advice and assistance are still being made, and the Society desires again publicly to announce its readiness to help in the way indicated, and especially to point out the desirability of applications being made direct, and in the first instance, to the Society, 9 Albert Square.—Yours, &c., J. LANG, *Secretary.*

Chronic Intermittent Hæmaturia in Cattle.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—I was much interested in Mr. G. J. Roberts' communication in the issue of August 11th. The case which I reported on July 14th certainly tallies in most details with Hoare's description of chronic hæmorrhagic cystis—said to occur only on the Continent and in Canada—and the latter statement has possibly been accepted too literally. My case, however, ran a very acute course—four weeks from the appearance of the first symptom.

At any rate, I cannot believe that chronic hæmaturia is synonymous with this disease, for although I do not meet with cases of the former in my immediate neighbourhood, I have seen about five over the border in Merionethshire. None of these showed palpable lesions in the bladder. Of three of them I lost sight. One recovered immediately after a full hypodermic dose of adrenalin. The last case—a pregnant cow—after receiving the ordinary redwater treatment for three weeks with no improvement, was injected with atropin. The urine cleared in a few hours, and recovery was permanent.—Yours truly, L. W. WYNN LLOYD.

Carnarvon, August 25th, 1923.

Re Alfred William Holmes.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—In your issue of August 25th a paragraph appears about the suicide of a man called Alfred William Holmes, who is stated to be a veterinary surgeon. I have looked through half a dozen registers of the R.C.V.S. and cannot find such a name either among the qualified men or registered practitioners. The same paragraph appeared in our local press with startling headlines. I think our profession has to suffer enough black sheep opprobrium without being unnecessarily tarred by the appearance of such paragraphs as this one.—Yours truly, G. MAYALL, M.R.C.V.S.

The Editor begs to acknowledge the receipt of the following :—

Communications from Messrs. R. P. Jones (Ruthin), S. Howart, E. W. Wallis, and Capt. H. Kirk.

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Herniæ.—Surgical Affections of the Head—Affections of the Ear—Affections of the Pharynx and Larynx—Fistulous Withers and Poll-Evil—Surgical Diseases of the Urinary Apparatus—Fractures—Restraint—Surgical Anæsthesia—Surgical Technique—Operation for Roaring—Tracheotomy—Castration—Cryptorchid Castration—Spaying (Oophorectomy or Ovariotomy)—Laparotomy or Abdominal Section—Neurectomy—Choking—Hydrocele, Orchitis, Scirrhous Cord—Diseases of Rectum and Tail—Diseases of the Sheath and Penis—Tympanites of the Rumen—Rumenotomy—Diseases of the Mammary Glands—Milking Machines—Applied Obstetrics—Sterility—Dentition—Surgical Shoeing—Index.

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